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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,410	01/15/2004	Joel Lynn Boles	020569-00901 (P203-1311-U)	6101
54487	7590	03/13/2006	EXAMINER	
JONES & SMITH, LLP THE RIVIANA BUILDING 2777 ALLEN PARKWAY, SUITE 800 HOUSTON, TX 77019-2141			KUGEL, TIMOTHY J	
			ART UNIT	PAPER NUMBER
			1712	

DATE MAILED: 03/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/758,410

Applicant(s)

BOLES, JOEL LYNN

Examiner

Timothy J. Kugel

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) 11, 15-26 and 35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-14, 27-34 and 36-38 is/are rejected.
- 7) ☒ Claim(s) 13 and 37 is/are objected to.
- 8) ☒ Claim(s) 1-38 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date see Detailed Act.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

### **DETAILED ACTION**

1. Claims 1-38 are pending as filed on 15 January 2004. Claims 11, 15-26 and 35 are withdrawn from further consideration.

#### ***Restrictions***

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-14 and 27-38, drawn to a method of fracturing a subterranean formation, classified in class 166, subclass 271.
- II. Claims 15-26, drawn to a fracturing fluid, classified in class 507, subclass 225.

The inventions are distinct, each from the other because of the following reasons:

3. Inventions II and I are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the fracturing fluid can be used in another process, such as treating a subterranean formation that has not been fractured.

4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

#### ***Election of Species***

***IA***

5. Should the applicant elect to proceed with the claims of Group I, this application contains claims directed to the following patentably distinct species of the claimed invention: the metal crosslinking agent containing aluminum and zirconium of claims 10 and 34 or the metal crosslinking agents of claims 11 and 35.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 9 and 33 are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over

the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

***IB***

6. Should applicant elect to proceed with the invention of Group I and the species of metal crosslinking agents of claims 11 and 35, claims 11 and 35 are generic to a plurality of disclosed patentably distinct species comprising the metal crosslinking agents. Applicant is required under 35 U.S.C. 121 to elect a single disclosed species, even though this requirement is traversed.

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

***IIA***

7. Should the applicant elect to proceed with the claims of Group II, this application contains claims directed to the following patentably distinct species of the claimed invention: the metal crosslinking agent containing aluminum and zirconium of claim 22 or the metal crosslinking agents of claim 23.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 9 and 33 are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

### ***IIB***

8. Should applicant elect to proceed with the invention of Group I and the species of metal crosslinking agent of claim 23, claim 23 is generic to a plurality of disclosed patentably distinct species comprising the metal crosslinking agents. Applicant is required under 35 U.S.C. 121 to elect a single disclosed species, even though this requirement is traversed.

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

### ***Elections***

9. During a telephone conversation with John Wilson Jones on 1 February 2006 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-14 and 27-38. Further, a provisional election of the species of metal crosslinking agent containing aluminum and zirconium of claims 10 and 34 was made with traverse. Affirmation of this election must be made by applicant in replying to this Office action.

Claims 15-26 are withdrawn from further consideration by the examiner pursuant to 37 CFR 1.142(b), as being drawn to a non-elected invention. Claims 11 and 35 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Information Disclosure Statement***

10. The information disclosure statements (IDS) submitted on 15 January 2004, 9 August 2004 and 1 February 2006 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements have been considered by the examiner.

***Drawings***

11. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because it is unclear in the legend whether the term 'BXX' refers to the lactic acid BXX-RXLA-1162 or to the poly-co(acrylamide-acrylamidomethylpropane sulfonic acid) BXX-AGA-818. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

***Claim Objections***

12. Claims 13 and 37 are objected to because of the following informalities: the term 'the formula' should appear after the term 'copolymer of'. Appropriate correction is required. The claims were construed as such.

***Claim Interpretation***

13. Claim 9 uses the transitional term including, which has been construed as being synonymous with 'comprising', which is inclusive or open-ended and does not exclude additional, unrecited elements or method steps.



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14. Claim 27, since it is drafted in Jepson format, has been construed as an admission that the subject matter of the preamble—"In a method of fracturing a subterranean formation of an oil or gas well to stimulate production of hydrocarbons by injecting at high pressure into the formation a fluid comprising an aqueous acid, a synthetic polymer, and a metal crosslinking agent"—is the prior art work of another.

***Claim Rejections - 35 USC § 102***

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. Claims 1, 7, 9, 12, 27, 31, 33 and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 4,460,751 (Hanlon hereinafter).

Hanlon teaches a process of treating the surfaces of a subterranean formation comprising injecting a composition (Column 2 Line 64 – Column 3 Line 4) comprising a zirconium compound (Column 3 Lines 13-18) and alpha-hydroxy acid—including lactic acid (Column 3 Line 14-54 and Column 6 Lines 25-28), a copolymer comprising acrylamide (Column 5 Lines 5-11) and an aqueous acid—including hydrochloric acid (Column 7 Lines 36-47) at 110°F (Column 8 Lines 61-68).

***Claim Rejections - 35 USC § 103***

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claims 2, 3, 10 and 34 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hanlon in view of US Patent 4,917,186 (Mumallah).

Hanlon discloses a process of treating the surfaces of a subterranean formation comprising injecting a composition comprising a zirconium compound and alpha-hydroxy acid—including lactic acid—a copolymer comprising acrylamide and an aqueous acid—including hydrochloric acid—at 110°F as detailed above.

Hanlon does not disclose expressly using a crosslinking agent containing zirconium and aluminum.

Mumallah discloses a process for altering the water permeability of subterranean formations (Abstract, Column 1 Lines 7-11) comprising crosslinking a copolymer of acrylamide and sodium 2-acrylamido-2-methylpropane sulfonate (Column 4 Lines 44-54) at temperatures in the range of from about 160°F to about 210°F (Column 2 Lines 43-50) with a polyvalent metal cation selected from aluminum, zirconium and mixtures thereof (claim 11 Column 16 Lines 6-11).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to perform the crosslinking of Hanlon at the temperatures of Mumallah. The motivation to do so would have been to allow the crosslinking to take place at long distances from the injection points (Mumallah Column 2 Lines 43-50).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the combined aluminum/zirconium crosslinking agent of Mumallah in the process of Hanlon since it has been held that it is *prima facie* obviousness to

combine two components each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the same purpose. *In Re Kerkhoven*, 205 USPQ 1069, 1072 (CCPA 1980); and *Ex Parte Quadranti*, 25 USPQ2d 1071 (Bd. Pat. App. & Inter. 1992).

19. Claims 1-7, 9, 12, 13, 27-31, 33, 36 and 37 rejected under 35 U.S.C. § 103(a) as being unpatentable over US patent 4,624,795 (Dawson hereinafter) in view of US 3,481,400 (Kerver hereinafter) as evidenced by Lactic Acid Relative Density, 2001, [www.inchem.org/documents/icsc/eics0501.htm](http://www.inchem.org/documents/icsc/eics0501.htm) (InChem hereinafter).

Dawson teaches a process to fracture-acidize a formation comprising injecting a composition (Column 1 Lines 5-16) comprising an aqueous acid—hydrochloric acid (Column 1 Lines 17-33), a copolymer comprising acrylamide and acrylamidomethylpropane sulfonic acid (Column 1 Lines 61-64 and Claim 4 Column 11 Lines 59-62), and gelling the composition using zirconium compounds (Column 1 Line 63 – Column 2 Line 4) at temperatures up to 120°C—248°F (Column 2 Lines 35-37).

Dawson does not disclose expressly the use of lactic acid in the process.

Kerver discloses a composition for treating a well (Column 1 Lines 14-27) comprising lactic acid at levels of about 165 gallons of a 30% solution of acid with 130 barrels of water (Column 3 Lines 43-47 and 65-70 and Column 4 Lines 52-55). This calculates to about 90 pounds of lactic acid per 1,000 gallons of water using the specific gravity of lactic acid of 1.2 as shown by InChem and standard conversions.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the lactic acid of Kerver in the process of Dawson. The motivation

to do so would have been to eliminate plugging caused by iron oxide or iron sulfide (Kerver Column 3 Lines 38-47).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use less than 25 pounds of lactic acid per 1,000 gallons of the composition, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering optimum or workable ranges involves only ordinary skill in the art. *In re Aller*, 105 USPQ 233.

20. Claims 8 and 32 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Dawson in view of Kerver as applied to claims 1-7, 9, 12, 13, 27-31, 33, 36 and 37 described above in further view of US Patent 4,752,404 (Burns hereinafter).

Dawson and Kerver combine to teach a process to fracture-acidize a formation comprising injecting a composition comprising an aqueous acid—hydrochloric acid—a copolymer comprising acrylamide and acrylamidomethylpropane sulfonic acid, and lactic acid and gelling the composition using zirconium compounds at temperatures up to 120°C—248°F as described above.

Dawson and Kerver do not disclose expressly including formic or acetic acid in the composition.

Burns discloses a composition useful for fracturing or acidizing subterranean formations (Column 1 Lines 4-12) comprising a copolymer of acrylamide and sodium 2-acrylamido-2-methylpropane sulfonate (Column 1 Lines 40-59) and an acid—including hydrochloric acid, formic acid, acetic acid or mixtures thereof (Column 2 Lines 32-40) and crosslinked with a compound comprising zirconium (Column 2 Lines 41-56).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use a combination of hydrochloric acid with acetic and/or formic acid in the process of Dawson and Kerver, since it has been held that it is *prima facie* obviousness to combine two components each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the same purpose. *In Re Kerkhoven*, 205 USPQ 1069, 1072 (CCPA 1980); and *Ex Parte Quadranti*, 25 USPQ2d 1071 (Bd. Pat. App. & Inter. 1992).

21. Claims 10 and 34 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Dawson in view of Kerver as applied to claims 1-7, 9, 12, 13, 27-31, 33, 36 and 37 described above in further view of Mumallah.

Dawson and Kerver combine to teach a process to fracture-acidize a formation comprising injecting a composition comprising an aqueous acid—hydrochloric acid—a copolymer comprising acrylamide and acrylamidomethylpropane sulfonic acid, and lactic acid and gelling the composition using zirconium compounds at temperatures up to 120°C—248°F as described above.

Dawson and Kerver do not disclose expressly crosslinking with an agent that includes aluminum and zirconium.

Mumallah discloses a process for altering the water permeability of subterranean formations comprising crosslinking a copolymer of acrylamide and sodium 2-acrylamido-2-methylpropane sulfonate at temperatures in the range of from about 160°F to about 210°F with a polyvalent metal cation selected from aluminum, zirconium and mixtures thereof as detailed above.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the combined aluminum/zirconium crosslinking agent of Mumallah in the process of Dawson and Kerver, since it has been held that it is *prima facie* obviousness to combine two components each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the same purpose. *In Re Kerkhoven*, 205 USPQ 1069, 1072 (CCPA 1980); and *Ex Parte Quadranti*, 25 USPQ2d 1071 (Bd. Pat. App. & Inter. 1992).

22. Claims 14 and 38 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Dawson in view of Kerver as applied to claims 1-7, 9, 12, 13, 27-31, 33, 36 and 37 described above in further view of European Patent Application Publication EP 0275624 (Jacobs hereinafter).

Dawson and Kerver combine to teach a process to fracture-acidize a formation comprising injecting a composition comprising an aqueous acid—hydrochloric acid—a copolymer comprising acrylamide and acrylamidomethylpropane sulfonic acid, and lactic acid and gelling the composition using zirconium compounds at temperatures up to 120°C—248°F as described above.

Dawson and Kerver do not disclose expressly the use of a gel breaker.

Jacobs discloses a fracture acidizing fluid Column 1 Lines 5-12) comprising an acid (Column 2 Lines 9-11), a zirconium crosslinking agent (Column 4 Lines 6-13), a copolymer of acrylamide and the sodium salt of acrylamidomethylpropane sulfonic acid (Column 4 Lines 47-50), lactic acid (Column 5 Lines 9-31) and a gel breaker (Column 3 Lines 3-5 and Column 5 Line 41 – Column 6 Line 16).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the gel breaker of Jacobs in the process of Dawson and Kerver. The motivation to do so would have been to control the viscosity of the composition (Jacobs Column 3 Lines 3-5).

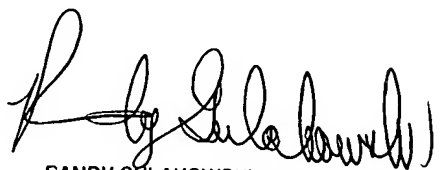
***Conclusion***

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Kugel whose telephone number is (571) 272-1460. The examiner can normally be reached 6:00 AM – 4:30 PM Monday - Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

24. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TJK  
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RANDY GULAKOWSKI  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700